

# CLAIMS

1. A calycin comprising a binding domain for binding at least one selected agent and a targeting domain that binds to at least a part of a hair fibre and/or skin surface for targeting said calycin to said hair fibre and/or skin surface.
2. A calycin according to claim 1, further comprising a subunit interaction domain wherein said subunit interaction domain is a naturally occurring part of the calycin or is inserted using conventional synthetic or recombinant techniques.
3. A calycin multimer formed by the multimeric assembly of calycins according to claim 2
4. A calycin according to claim 1 or claim 2 or a calycin multimer according to claim 3 wherein said binding domain and/or said targeting domain is endogenous to the calycin or calycin multimer or is a corresponding binding and/or targeting domain which is adapted accordingly by alteration of the existing binding and/or targeting domain or the substitution of the existing binding and/or targeting domain for a domain that has the required functionality.
5. A calycin or a calycin multimer according to any of claims 1 to 4 wherein said binding domain is adapted to bind more than one ligand.
6. A calycin or a calycin multimer according to claim 5 wherein the ligands are of a disparate nature according to the corresponding binding sites which are based on different binding domains found in different calycins.
7. A calycin or a calycin multimer according to any of the preceding claims wherein the or at least one calycin is  $\beta$ -lactoglobulin.

8. A calycin or a calycin multimer according to any of the preceding claims wherein the or at least one calycin is Major Urinary Protein and/or recombinant Major Urinary Protein.
9. A method for creating a calycin or a calycin multimer according to any of the preceding claims wherein said method comprises the use of recombinant DNA techniques in the creation of calycin mutant and fusion proteins.
10. A method according to claim 9 wherein the ligand binding domain and/or the targeting domain is genetically modified to alter the specificity of ligand binding and/or the affinity of the targeting domain for its binding site.
11. A method according to claim 9 or claim 10 further comprising the production of molecular complexes with more than one type of ligand binding domain wherein calycin genes are fused to one another and/or appropriate linking regions are used to produce a multi component gene and gene product and/or interaction sites are introduced into individual monomers of the calycins such that on mixing the individual proteins, molecules assemble into multi-sub unit complexes with similar or different functionalities.
12. A method according to claim 11 wherein said method additionally or alternatively comprises chemical methods in the crosslinking of calycin monomers to form multimeric complexes.
13. A method according to claim 12 wherein said chemical methods include bifunctional cross-linking agents.
14. A method according to claim 13 wherein the cross-linking agent is 1-ethyl-3-[3-

dimethylaminopropyl]carbodiimide hydrochloride (EDC).

15. A method according to any of claims 9 to 13 to effect the cross-linking of  $\beta$ -Lactoglobulin and recombinant Major Urinary Protein.
16. A calycin or a calycin multimer according any of claims 1 to 8 wherein said calycin or calycin monomer is manufactured using recombinant genetic techniques and/or chemical methods according to any of claims 6 to 15.
17. A hair or skin care composition comprising at least one calycin according to any of claims 1 to 8 and/or claim 16.
18. A composition according to claim 17 wherein said composition comprises at least one calycin characterised in that it has the ability to bind fatty acids that coat hair cuticles and/or skin or protein moieties that comprise the cuticle and/or skin.
19. A composition according to claim 17 or 18 wherein said composition provides a cosmetic or therapeutic effect.
20. A composition according to claim 19 wherein the cosmetic effect involves the targeting of said calycin to hair to provide a conditioning effect and/or the targeting of perfume or hair dye to hair to provide at least one desired effect.
21. A composition according to claim 19 wherein the therapeutic effect involves the targeting of said calycin to hair and/or skin to prevent and/or cure a medical condition.
22. A composition according to claim 21 wherein the calycin binds and transports an insecticide to hair and/or skin to prevent and/or cure infestation.

23. A composition according to claims 21 or 22 which is a veterinary composition for use in the treatment of parasitic infection of animals and/or birds.
24. A method for the treatment of humans and/or animals and/or birds which involves the administration of the therapeutic composition of the invention to an individual and/or animal and/or bird to prevent and/or cure a condition affecting hair, fur, hide, feathers, scalp and skin.